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The central committee is composed of Admiral Fisher, chairman, Sir Joseph John Thomson, Cavendish professor of experimental physics at Cambridge University; Sir Charles A. Parsons, and Mr. George T. Beilby, chairman of the Royal Technical College at Glasgow. The consulting panel includes the following and will be added to from time to time as such action becomes necessary: Herbert B. Baker, professor of chemistry at the Imperial College of Science and Technology, London; William H. Bragg, Cavendish professor of physics, University of Leeds; H. G. H. Carpenter, professor of metallurgy in the Royal School of Mines; Percy F. Frankland, professor of chemistry and dean of the faculty of science, University of Birmingham; Bertram Hopkinson, professor of mechanism and applied mechanics, Cambridge University; William Jackson Pope, professor of chemistry, Cambridge University; the Hon. Robert J. Strutt, professor of physics, Imperial College of Science; Sir William Crookes, the well-known chemist; Mr. William Duddell, electrical engineer; Sir Oliver J. Lodge, principal of the University of Birmingham; Sir Ernest Rutherford, professor of physics, University of Manchester, and Mr. George Gerald Stoney, a consulting engineer.

Secretary Daniels announced on July 19 that he had that day written to eight leading scientific societies asking each of them to select two members to serve on the proposed Naval Advisory Committee on inventions, of which Mr. Thomas A. Edison has accepted the chairmanship. The societies are: American Chemical Society, President Charles H. Herty; American Institute of Electrical Engineers, President Paul M. Lincoln; American Institute of Mining Engineers (metals), President Benjamin B. Thayer; American Mathematical Society, President E. W. Brown; American Society of Civil Engineers, President Hunter MacDonald; American Society of Mechanical Engineers, President James Hartness; American Aeronautical Society, Acting President Frederick W. Baker, and the Inventors' Guild, President Dr. Edward Weston.

The New York *Times* states that "when the attention of Secretary Daniels was called to the fact that he had not invited the American Association for the Advancement of Science or the National Academy of Sciences to participate in the naming of the board, Mr. Daniels answered that it was not his purpose to overlook any of the leading scientific bodies and that it was altogether possible that additional invitations might be sent to several other societies. The American Association for the Advancement of Science was organized in 1848 and now has a membership of 8,100. The National Academy of Sciences, incorporated by Act of Congress on March 3, 1863, is composed of 139 members and 49 foreign associates. The act of congress provides that the academy 'shall, whenever called upon by any department of the government, investigate, examine, experiment and report upon any subject of science or art, the actual expense to be paid from appropriations which may be made for the purpose.'"

#### SCIENTIFIC NOTES AND NEWS

DR. WILLIAM H. WELCH, professor of pathology in the Johns Hopkins University, sailed for China on July 17, and Dr. Simon Flexner, director of the laboratories of the Rockefeller Institute for Medical Research, will join him there. They go on behalf of the China Medical Board of the Rockefeller Foundation to report on the medical schools and hospitals.

A MARBLE chair is about to be placed in the open-air Greek Theater of the University of California in honor of Eugene Waldemar Hilgard, professor of agriculture and dean of the College of Agriculture from 1875 to 1906, and now professor emeritus.

THE next course of Lane medical lectures before the School of Medicine of Stanford University, will be given by Dr. Frank Billings, of Chicago. Dr. Billings will speak on "Focal Infection." The five lectures will be delivered the evenings of the week of September 20 to September 25, 1915. Dr. Billings has also agreed to give some clinical demonstrations.

PRINCE BORIS GALITZIN, professor of physics in the Imperial Academy of Sciences, Petro-

grad, has been appointed Halley lecturer for the year 1916 at the University of Oxford.

DR. GEORGE E. DE SCHWEINITZ, of Philadelphia, was elected president of the American Ophthalmological Society at the annual meeting held recently in New London, Connecticut.

THE council of the Royal Society of Edinburgh has awarded the Makdougall-Brisbane prize for the biennial period 1912-14 to Professor C. R. Marshal, Dundee and St. Andrews, for his studies on pharmacological action of tetra-alkyl ammonium compounds.

THE Physikalisch-Medizinische Gesellschaft at Würzburg, the local scientific society to which Röntgen presented his first report on the Röntgen rays, has recently had his three communications on the subject reprinted in pamphlet form.

As has been noted in SCIENCE the Osiris prize of \$20,000 was recently awarded for antityphoid vaccination to Professor Vincent and Professors Chantemesse and Widal. We learn from the *Journal* of the American Medical Association that Dr. Chantemesse has devoted his share to the preparation and gratuitous distribution of antityphoid vaccine in France. Dr. Widal has presented his share to the Assistance publique as a contribution to the construction and the maintenance of the laboratory of the Cochin Hospital.

THE University of Leeds, as we learn from *Nature*, conferred on July 3 honorary degrees as follows: *Doctor of Science*: Mr. Harold W. T. Wager, F.R.S., inspector of schools, who began his professorial career at the Yorkshire College, known for his researches in cytology and other biological fields. *Master of Science*: Mr. T. H. Nelson, of Redcar, author of "The Birds of Yorkshire"; Mr. W. Denison Roebuck, joint author of "Handbook of the Vertebrate Fauna of Yorkshire"; Mr. T. Sheppard, curator of the Hull Museums, author of "Geological Rambles in East Yorkshire," "The Lost Towns of the Yorkshire Coast," and many geological and archeological memoirs; Mr. J. W. Taylor, author of a "Monograph of the British Land and Freshwater Mollusca"; Mr. J. G. Wilkinson, past-president of the Leeds Nat-

uralists' Club, distinguished by his extensive and exact knowledge of the structure of plants, though blind; Dr. T. W. Woodhead, lecturer in biology at the Technical College, Huddersfield, honorary secretary of the Yorkshire Naturalists' Union, and author of various biological memoirs.

DR. ALFRED SCHULTZE has been promoted to be professor and member of the Reichsanstalt, at Charlottenburg, and Dr. Walther Meissner to be an associate in the institution.

A LABORATORY of the U. S. Public Health Service for the investigation of occupational diseases is to be established in Pittsburgh under the supervision of Dr. J. W. Schereschewsky, of Washington.

PROFESSOR H. S. JACKSON, head of the botany and plant pathology department of the Oregon Agricultural College, has resigned to become chief of the botany department of the Purdue University Experiment Stations.

DR. HENRY S. GRAVES, chief of the U. S. Forestry Service, has gone to Alaska to inspect the Alaskan forest reserves.

DRS. HARRY PLOTZ and George G. Bohrer, both of the staff of Mt. Sinai Hospital, New York, have sailed on the Greek steamer *Themistocles*. They took with them a complete bacteriologic outfit supplied by the hospital and will proceed to Nish where they will join Dr. Richard P. Strong, the head of the Serbian sanitary commission.

JOSEPH B. UMPLEBY, of the U. S. Geological Survey, will spend the year 1915-16 at the University of California as acting professor of geology, serving in the stead of Professor George D. Louderback, who is to spend a second year in China investigating the oil deposits of China in behalf of the Standard Oil Company.

PROFESSOR LYMAN C. NEWELL, head of the department of chemistry in Boston University, has returned from his sabbatical year and will resume his teaching upon the opening of the university in September.

DR. JOSEPH AUSTIN HOLMES, director of the U. S. Bureau of Mines since its establishment

in 1910, previously chief of the technological branch of the U. S. Geological Survey, professor of geology in the University of North Carolina and state geologist of North Carolina, died from tuberculosis in Denver, Colorado, on July 13, in his fifty-sixth year.

DR. FRANCIS DELAFIELD, the distinguished New York physician and pathologist, professor emeritus of pathology and the practise of medicine in the College of Physicians and Surgeons, Columbia University, died on July 18, at the age of seventy-four years.

DR. ROBERT MACKAY DAWBARN, professor of surgery at the Fordham University Medical School, senior surgeon of the New York Hospital, died on July 17, in his sixty-sixth year.

CHIEF ENGINEER JOHN J. BISSETT, United States navy, retired, died at Bridgeport, Conn., on July 20, aged seventy-nine years.

MR. ROBERT HEATH LOCK, known for his work in genetics, formerly curator at the University of Cambridge and assistant director of the Botanic Gardens of Peradeniya in Ceylon, has died at the age of thirty-six years.

MR. C. E. P. SPAGNOLETTI, the British electrical engineer, died on June 28, at the age of eighty-three years.

PROFESSOR HUGO LUTHJE, director of the medical clinic at the University of Kiel, has died at the age of forty-five years.

PROFESSOR FRITZ MÜHLBERG, the Swiss geologist and paleontologist, has died in Aarau.

DR. MAX RAPPART, assistant in chemistry under Professor Fischer in the University of Berlin, has been killed in the war.

WITH the issue of the *Athenæum* for July 3 is published the first instalment of a subject index to periodicals, undertaken at the request of a committee appointed for the purpose by the Library Association. The progress of science and technology in 1915, with special reference to the war, is the first subject to be indexed.

FOR the survey of the animal and bird life of the Yosemite National Park, being carried on this summer by the California Museum of Vertebrate Zoology, a gift of \$1,145 has been

made to the University of California by Miss Annie M. Alexander, of Oakland, Senator Joseph D. Phelan, of San Francisco, Mr. G. M. Marston and Mr. Stephen T. Mather, assistant secretary of the interior.

THE United States Geological Survey has issued a guidebook describing the overland route from Missouri River to the Pacific coast. It is Secretary Lane's desire that the trans-continental journey, by whatever route, shall afford the traveler an intimate acquaintance with the country through which he passes, and this volume, therefore, is the first of four which will appear in rapid succession. The next to come, that covering the Northern Pacific route, so closely identified with the Lewis and Clark expedition of 1803-06, will be published in a few days; and those describing the Santa Fe route and the Shasta and Coast route will follow soon. The route is followed from station to station, and the country along the way described and explained from many points of view—human history, geologic history, agricultural and mining values. The guide books are full of items of general interest that will answer such questions as the average intelligent traveler is continually asking. In a broad way the story of the west is a unit, and the aim of this description of the western United States is to meet the needs of the American citizen who desires to understand what he sees. In the preparation of the book on the Overland Route (Bulletin 612) much information already in the possession of the Geological Survey has been utilized, but to supplement this material three geologists last year made a field examination of the entire route, while special topographic surveys for the accompanying maps were made by survey engineers. The route is covered by a series of 29 complete and accurate maps, which are so arranged that the reader can unfold them one by one and keep each map in view while he is reading the text relating to the portion of the route it represents. The book is also freely illustrated with half-tone plates of some of the most striking views and objects to be seen on the journey and with pictures of prehistoric animals that inhabited the west in ages past,

when Nebraska and Colorado, for instance, were huge swamps frequented by strange beasts whose fossil remains are now found in the rocks formed from the sand and mud of the ancient swamps, which have since been elevated thousands of feet. The book of 244 pages is as a whole distinctly popular in character.

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#### UNIVERSITY AND EDUCATIONAL NEWS

GOVERNOR DUNNE has signed the bill giving \$5,000,000 to the University of Illinois for the biennium. It is the largest grant made in a single law to any university in the United States.

THE University of California has accepted an offer of the Children's Hospital, of San Francisco, whereby the hospital remains independent financially and administratively, but whereby all its resources become available for the educational purposes of the University of California Medical School.

A SEPARATE department of chemical engineering on the same plane as the mining, civil, electrical and mechanical engineering departments will be established in the Columbia graduate engineering school next fall. The head of this department will be Professor Milton C. Whitaker, who has been the professor of engineering chemistry for the past five years. For the past ten years the university has offered courses leading to the degree of chemical engineer in the department of chemistry but the rapidly increasing importance of these industries based upon the applications of chemistry and the subsequent demand for men especially trained in fundamental engineering problems has led the university to supplement these courses with the more elaborate facilities and opportunities offered in a separate chemical engineering department.

THE new announcement of the West Virginia University states that on and after September 1, 1917, two years of collegiate work, including courses in physics, chemistry, biology and French or German, will be required for admission to the medical school.

THE University of Cincinnati is again giv-

ing a pre-medical summer course in physics, analytical chemistry, organic chemistry and zoology. The term lasts from June 7 to August 14, a period of ten weeks.

DR. M. ALLEN STARR has resigned the professorship of neurology at the College of Physicians and Surgeons, Columbia University, and has been succeeded by Dr. Frederick Tilney, Brooklyn.

DR. R. H. GODDARD, instructor in physics at Clark College for the past year, has been made assistant professor.

THE following appointments have been made in the medical faculty of McGill University: Assistant professor of chemistry, Dr. F. W. Skirrow; assistant professor of physiology, Dr. J. A. Gray; associate professor in pathology, Dr. Horst Oertel; assistant lecturer in physiology, Dr. T. P. Shaw; lecturers in immunology, Drs. J. C. Meakins and Fraser B. Gurd; lecturer in hygiene, Dr. R. St. J. Macdonald; lecturer in biology, Dr. F. S. Jackson, and associate professor of physics, Dr. L. V. King.

DR. RICHARD HEYMONS has been appointed professor of zoology in the Berlin School of Agriculture.

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#### DISCUSSION AND CORRESPONDENCE

##### THE FUNDAMENTAL EQUATION OF MECHANICS

I. IN regard to the question whether  $F = ma$  or  $F/F' = a/a'$  is the better form in which to introduce the fundamental equation of mechanics, the first point of difference between Professor Hoskins and myself may be stated as follows:<sup>1</sup>

Professor Hoskins's method presupposes, as a matter of common knowledge (in advance of any statement of the fundamental equation), the difficult concept of mass or inertia; while my method postpones the introduction of this concept until the student is in position to define it intelligently in terms of the simpler concepts of force and acceleration.

In an attempt to justify his introduction "at the outset" of the "body-constant," mass,

<sup>1</sup> See Professor Hoskins's article in *SCIENCE* for April 23, 1915, which was written in reply to an article of mine in *SCIENCE* for February 5, 1915.